

WHAT IS CLAIMED IS:

1. A computer implemented method of enhancing sound quality for computer telephony systems, comprising:
 - receiving digital signals including telephony sounds;
 - performing time-to-frequency domain conversion on the digital signals;
 - detecting whether noise is present in the frequency domain conversion of the digital signals; and
 - applying a filter to remove the noise if noise was detected in the frequency domain conversion of the digital signals.
2. The method of claim 1, wherein detecting whether noise is present comprises:
 - comparing the amplitudes of sounds in the frequency domain conversion of the digital signals; and
 - determining noise is present if the amplitudes cross a threshold.
3. The method of claim 1, wherein detecting whether noise is present comprises:
 - comparing the amplitudes of sounds in a first band to the amplitudes of sounds in a second band in the frequency domain conversion of the digital signals; and
 - determining noise is present if the amplitudes of sounds in the first and second bands are substantially the same.
4. The method of claim 1, wherein detecting whether noise is present comprises:
 - comparing the amplitudes of sounds in low, middle and high bands in the frequency domain conversion of the digital signals; and
 - determining noise is present if the amplitudes of sounds in the low, middle and high bands are substantially the same.

5. The method of claim 1, wherein the first band includes sounds less than 500 Hertz, the second band includes sounds from 500 to 1500 Hertz and the third band includes sounds greater than 1500 Hertz.

6. The method of claim 1, wherein detecting whether noise is present comprises:
5 examining the amplitude of sounds at one or more power line frequencies in the frequency domain conversion of the digital signals over a time interval; and
determining noise is present if the amplitude of sounds at the one or more power line frequencies crosses a threshold over the time interval.

7. The method of claim 1, wherein the one or more power line frequencies include one or more of 50 Hertz, 60 Hertz, 100 Hertz, 120 Hertz, 150 Hertz, and 180 Hertz.

8. The method of claim 1, wherein detecting whether noise is present comprises:
examining the amplitudes of sounds in a first band in the frequency domain
conversion of the digital signals over a time interval; and
determining noise is present if the amplitudes of sounds in the first band cross a
threshold over the time interval.

9. The method of claim 1, wherein the filter is applied if noise is detected for a specific time period.

10. The method of claim 1, wherein the filter is no longer applied if noise is not detected for a specific time period.

11. The method of claim 1, wherein the filter is a software filter.

12. A computer implemented method of enhancing sound quality for computer telephony systems, comprising:

receiving digital signals including telephony sounds;

performing time-to-frequency domain conversion on the digital signals;

detecting whether noise is present in the frequency domain conversion of the digital signals if the amplitudes of sounds in first and second bands in the frequency domain conversion of the digital signals are substantially the same; and

applying a filter to remove the noise if noise was detected in the frequency domain conversion of the digital signals.

13. The method of claim 12, further comprising:

comparing the amplitudes of sounds in a third band to the first and second bands in the frequency domain conversion of the digital signals; and

determining noise is present if the amplitudes of sounds in the first, second and third bands are substantially the same.

14. The method of claim 12, wherein the first band includes sounds less than 500 Hertz, the second band includes sounds from 500 to 1500 Hertz and the third band includes sounds greater than 1500 Hertz.

15. The method of claim 12, wherein the amplitudes of sounds comprise an average over a time interval.

16. A computer implemented method of enhancing sound quality for computer telephony systems, comprising:

receiving digital signals including telephony sounds;

performing time-to-frequency domain conversion on the digital signals;

detecting whether noise is present in the frequency domain conversion of the digital signals if the amplitudes of sounds in a middle band exceed the amplitudes of sounds in low and high bands by a predetermined amount; and

applying a filter to remove the noise if noise was detected in the frequency domain conversion of the digital signals.

17. The method of claim 16, wherein the low band includes sounds less than 500 Hertz, the middle band includes sounds from 500 to 1500 Hertz and the high band includes sounds greater than 1500 Hertz.

18. The method of claim 16, wherein the amplitudes of sounds comprise an average over a time interval.

19. A computer implemented method of enhancing sound quality for computer telephony systems, comprising:

receiving digital signals including telephony sounds;

performing time-to-frequency domain conversion on the digital signals;

detecting whether noise is present in the frequency domain conversion of the digital signals if the amplitude of sounds at one or more power line frequencies in the frequency domain conversion of the digital signals crosses a threshold over the time interval; and

applying a filter to remove the noise if noise was detected in the frequency domain conversion of the digital signals.

20. The method of claim 19, wherein the one or more power line frequencies include one or more of 50 Hertz, 60 Hertz, 100 Hertz, 120 Hertz, 150 Hertz, and 180 Hertz.

21. The method of claim 19, wherein the amplitudes of sounds comprise an average over a time interval.

22. A computer implemented method of enhancing sound quality for computer telephony systems, comprising:

receiving digital signals including telephony sounds;

performing time-to-frequency domain conversion on the digital signals;

detecting whether noise is present in the frequency domain conversion of the digital signals if the amplitudes of sounds in a first band in the frequency domain conversion of the digital signals cross a threshold over a time interval; and

5 applying a filter to remove the noise if noise was detected in the frequency domain conversion of the digital signals.

23. The method of claim 22, wherein applying a filter comprises applying a low pass or high pass filter.

24. The method of claim 22, wherein the amplitudes of sounds comprise an average over a time interval.

25. A computer implemented method of enhancing sound quality for computer telephony systems, comprising:

receiving digital signals including telephony sounds;

performing time-to-frequency domain conversion on the digital signals;

detecting whether noise is present in the frequency domain conversion of the digital signals for a first specific time period; and

applying a filter to remove the noise if noise was detected in the frequency domain conversion of the digital signals.

26. The method of claim 25, wherein said filter applying step is not performed if noise is not detected for a second specific time period longer than said first specific time
20 period.

27. A computer program product that enhances sound quality for computer telephony systems, comprising:

computer code that receives digital signals including telephony sounds;

computer code that performs time-to-frequency domain conversion on the digital signals;

computer code that detects whether noise is present in the frequency domain conversion of the digital signals if the amplitudes of sounds in a middle band exceed the amplitudes of sounds in low and high bands by a predetermined amount;

computer code that applies a filter to remove the noise if noise was detected in the frequency domain conversion of the digital signals; and

a computer readable medium that stores the computer codes.

28. The computer program product of claim 27, wherein the low band includes sounds less than 500 Hertz, the middle band includes sounds from 500 to 1500 Hertz and the high band includes sounds greater than 1500 Hertz.

29. The computer program product of claim 27, wherein the amplitudes of sounds comprise an average over a time interval.

30. The computer program product of claim 27, wherein the computer readable medium is a CD-ROM, floppy disk, tape, memory, flash memory, system memory, hard drive, or data signal embodied in a carrier wave.